

**Appl. No. 10/649,076
Amdt. dated March 23, 2005
Reply to Office action of December 23, 2004**

REMARKS/ARGUMENTS

Applicants have received the Office Action dated December 23, 2004 (hereinafter *Office Action*), in which the Examiner: 1) rejected claims 1-20 under 35 U.S.C. § 112, paragraph one; 2) rejected claims 1-20 under 35 U.S.C. § 112, paragraph two; and 3) rejected claims 1-20 under 35 U.S.C. § 103(a) as allegedly unpatentable over *Broyles et al.* (U.S. Pat. No. 6,356,965, hereinafter *Broyles*) in view of *Reohr et al.* (U.S. Pat. No. 6,404,671, hereinafter *Reohr*).

With this Response, Applicants have amended claims 1, 10, 14, 17, and 20, canceled claims 11, 12, 15, 18, and 19, and added new claims 21-26. Therefore, claims 1-10, 13, 14, 16, 17, and 20-26 remain pending. Based on the remarks that follow, Applicants respectfully submit that the pending claims are in a condition for allowance.

I. AMENDMENTS TO THE SPECIFICATION

Applicants have amended the specification at paragraph [0027], sentence four to remove all reference to Figure 3B. Since there is no Figure 3B in the instant application, reference to it in paragraph [0027] is merely a clerical mistake, and in fact, this reference should be to Figure 5 instead. This amendment may alleviate the Examiner's confusion with respect to the § 112 rejections below.

II. REJECTIONS UNDER 35 U.S.C. § 112

Claims 1-20 stand rejected under § 112 as allegedly failing to comply with both the enablement requirement of § 112 paragraph one, and the definiteness requirement of § 112 paragraph two. For reasons set forth below, Applicants respectfully traverse these rejections and request reconsideration.

A. Enablement

The enablement requirement of § 112 ensures that the disclosure, when filed, contains "sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention." MPEP § 2164.01. The Examiner rejected claims 1-20 as allegedly failing to

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comply with the enablement requirement because it was unclear to the Examiner how memory elements 222 and 223, could "perform properly when the read conductors and the write conductors are electrically connected together without having an isolating layer in between." *Office Action* at 2. Applicants respectfully traverse because a close reading of the instant application, including the aforementioned amendments to paragraph [0027], clearly sets forth how the various conduction layers may be isolated. For example, Figure 5 illustrates write lines 216 and 217 separated from read lines 218 and 219 by an inter-layer dielectric (ILD). *Instant Application* at paragraph [0027], sentences 3 and 4. Furthermore, the instant application, as amended, specifically states that while ILDs are illustrated in Figure 5, "subsequent figures may not show an ILD to separate read and write lines for the sake of clarity. It should be understood that an ILD may be included between any read and write conductor pair for electrical isolation." *Id.* at paragraph [0027], sentences 5 and 6. For at least this reason, Applicants respectfully request withdrawal of the enablement rejection.

B. Definiteness

In order for the claims to comply with the definiteness requirement of § 112, the claims must set forth the subject matter that applicants regard as their invention, and the claims must particularly point out and distinctly define the metes and bounds of the subject matter that will be protected by the patent grant. MPEP § 2171. The Examiner rejected claims 1-20 as allegedly failing to comply with the definiteness requirement of § 112, and further requested clarification from Applicants as to the "common conductor" recited in at least some of the claims.

To assist the Examiner and purely for illustrative purposes, Applicants respectfully direct the Examiner's attention to an exemplary embodiment of the present invention illustrated in Figure 6. Specifically, Figure 6 illustrates write conductor 230 that are magnetically coupled to both memory elements 222 and 223. *Instant Application* at paragraph [0029], sentences 4 and 5 (emphasis added). Accordingly, the "common conductor" recited in some of the claims is

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supported by at least these portions of the instant application, and Applicants respectfully request withdrawal of the definiteness rejection.

III. REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-20 stand rejected under § 103 as allegedly obvious over *Broyles* in view of *Reohr*. As the Examiner is undoubtedly aware, an obviousness rejection requires that the cited art teach or suggest all of the claim elements. MPEP § 2143.03. Applicants respectfully traverse the obviousness rejections because neither *Broyles* nor *Reohr* teach or suggest all of the claim elements.

A. Claims 1, 6, and 8

Independent claim 1, as amended, recites that the "a magnetic field is induced in the first and second memory elements using the common conductor, and wherein the induced field temporarily perturbs a resistance of the first and second memory elements." (Emphasis added). Neither *Broyles* nor *Reohr* teach this claim element. Specifically, *Reohr* is directed to optimizing the magnetic field emanating from a common conductor such that desired memory elements change their magnetic orientation without affecting the magnetic orientation of undesired memory elements. See generally, *Reohr* at Col. 6-7; table 1; equation 5 (discussing the interpretation of incoming data and then optimizing the magnitude of the write currents). Thus, the whole goal of *Reohr* is to optimize the magnitude of the write current such that current is only used to make non-temporarily perturbations, which clearly teaches against claim 1. For at least this reason, *Reohr* fails to teach or suggest all the elements of claim 1.

Broyles, on the other hand, is directed to a hotkey for network service boot that provides for reduced system maintenance. *Broyles* makes no mention of inducing magnetic fields, and therefore does not teach or suggest the temporary perturbation element of claim 1. Accordingly, Applicants respectfully submit that claim 1, and its dependent claims, are in a condition for allowance.

Dependent claim 6 is allowable for additional reasons. For example, claim 6 is directed to a magnetic memory with magnetization thresholds that are altered. Neither *Reohr* nor *Broyles* teach or suggest altering magnetization

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thresholds, and therefore, claim 6 is in a condition for allowance for at least this additional reason.

Dependent claim 8 is also allowable for additional reasons. For example, claim 8 recites performing read and write operations simultaneously. Again, neither *Reohr* nor *Broyles* teach or suggest simultaneous read and write operations, and therefore, claim 8 is in a condition for allowance for at least this additional reason.

B. Claims 10 and 13

Independent claim 10, as amended, recites "to measure a rate of change of a resistance of the memory elements." Nowhere in *Reohr* or *Broyles* is there mention of measuring the rate of change of the resistance of a memory element. Thus, for at least this reason claim 10 and its dependent claims are in a condition for allowance.

Dependent claim 13 recites that the "magnetic orientation of the memory elements is not changed by the provided magnetic field." As mentioned above with regard to claim 1, *Reohr* and *Broyles* do not teach this element, and in fact, *Reohr* teaches against it by advocating the use of only an optimal amount of current. Accordingly, claim 13 is in a condition for allowance for at least this additional reason.

C. Claims 14 and 20

Independent claim 14, as amended, recites that "a current digital state of at least one of the plurality of memory elements is determined by monitoring resistance of the at least one memory element while magnetic orientation of the at least one memory element orientation is perturbed." (Emphasis added). *Reohr* fails to teach this claim element and in fact **teaches away from it**. Particularly, *Reohr* is directed to using future data to optimize the magnetic field emanating from a common conductor. *Reohr* at Col. 6, II. 5-16 (anticipating the magnetic field based on the next state data to be written to desired memory elements); Col. 14, II. 61-63 (describing a circuit for implementing the data dependent techniques). *Broyles* similarly does not teach or suggest this claim

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element. For at least this reason, claim 14, as well as its dependent claims, are in a condition for allowance.

Independent claim 20 similarly recites a "current" digital state of the memory elements, rather than a future state, and is therefore in a condition for allowance for at least the same reason as claim 14.

D. Claim 17

Independent claim 17, as amended, recites "monitoring a resistance of the memory elements while altering a digital state of the memory elements." Neither *Reohr* nor *Broyles* teach or suggest concurrent monitoring and altering of the resistance of a memory element. For at least this reason, claim 17 and its dependent claims are in a condition for allowance.

IV. CONCLUSION

In the course of the foregoing discussions, Applicants may have at times referred to claim elements in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other elements can be ignored or dismissed. The claims must be viewed as a whole, and each element of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the cited art which have yet to be raised, but which may be raised in the future.

Applicants respectfully request reconsideration and that a timely Notice of Allowance be issued in this case. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including

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fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,



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